

REMARKS

Claims 1, 2, 4-18, 20 and 22-24 were pending. The applicants add new claims 25-27.¹ The applicants present claims 1, 2, 4-18, 20, and 22-25 for examination in view of the amendments and the following remarks.

Claim Rejections – 35 USC § 103

Claims 1-2 and 5-11 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 6,355,946 ("Ishinaga"), in view of U.S. Pat. No. 6,335,548 ("Roberts"). Claims 4 and 22 were rejected under 35 U.S.C. 103(a) as being unpatentable over Ishinaga, in view of U.S. Pub. No. 2002/0121671 ("Wakisaka"). Claims 12-18, 20, 23, and 24 were rejected under 35 U.S.C. 103(a) as being unpatentable over Ishinaga and Roberts, in view of either U.S. Pat. No. 6,707,069 ("Song") or U.S. Pub. No. 2003/0230751 ("Harada"). The applicants respectfully disagree.

Claim 1 recites a connector body and a reflector body, “wherein said connector body and said reflector body are preformed separately from each other and said reflector body is disposed on said connector body in the form of a reflector top.” Neither Ishinaga nor Roberts alone or in combination have been shown to disclose this feature.

The office action asserts that the recited feature of claim 1 is a product by process limitation.² The applicants respectfully disagree. This is a structural feature. A person of ordinary skill in the art can readily distinguish between the structure of a device with a connector body and a reflector body preformed separately from each other before being attached and the structure of a device with a single body structured to perform as both a connector body and a reflector body (e.g., Roberts' single body).

The office action acknowledges Ishinaga does not disclose a reflector body that comprises a ceramic.³ Modifying Ishinaga's device in view of Roberts would not lead to the device claimed by the applicants. Roberts discloses a single ceramic body. A person of ordinary

¹ Support for the new claims is found at least in the originally filed dependent claims.

² Office action dated July 26, p. 4.

³ Office action dated July 26, p. 3.

skill in the art would recognize that any interfaces in the thermal path (such as the interfaces between the substrate 1A and the casing 5 disclosed by Ishinaga) can impede heat conduction away from the chips. As Ishinaga's substrate 1A may be a ceramic, and Roberts also discloses a ceramic body, the skilled person would use a single rigid body for improved heat conduction, rather than a separately fabricated part as the claimed reflector top which is to be connected to a substrate of some kind. Thus, if a person of ordinary skill in the art were to modify Ishinaga's device to improve the heat dissipation in view of Roberts' disclosure, the skilled person would use a single rigid body which is made from a thermally conductive material and mount the chips directly on this body in a cavity of the body as shown in Roberts' Figures.⁴

Furthermore, neither Roberts nor Ishinaga does teach an inclined surface in connection with a ceramic body suitable for a reflector body for a reflector top, i.e. a body which has an opening in the bottom which gives access to the conductor material on the connector body. Ishinaga only discloses that molded resins are well suited to fabricate bodies with an opening and inclined surfaces.⁵ If Roberts was regarded to disclose a coated ceramic material, which the applicants do not concede, Roberts still fails to disclose a body comprising a ceramic material which has inclined surfaces and a bottom opening.

Neither Wakisaka, Song, nor Harada has been shown to disclose such a body. In fact, Song teaches away from a ceramic body of this kind. Rather, Song teaches that it is possible to form molded resin bodies with an inclined and coated side surface of the chip mounting region. Song states:

Therefore, in an effort to accomplish desired characteristics of LED packages, there has been proposed a surface mounted type LED package, with an additional light reflecting surface formed by coating metal on an inclined side surface of the chip mounting area of a molded package body and having a predetermined reflective angle.⁶

Song further states that a laminated ceramic package has vertical side surfaces of the chip mounting region.

⁴ See, e.g., Roberts, FIG. 16a.

⁵ See, e.g., Ishinaga, see column 4, lines 44 to 49.

⁶ Song, column 2, lines 12-17.

The cavity surrounding the chip mounting area of the ceramic body is formed through a punching process or a cutting process, so the inside surface of the ceramic body defining the cavity is formed as a vertical surface.

To equip this vertical surface with an inclined surface, it is suggested to form an additional

inclined surface made of resin may be formed on the vertical inside surface of the ceramic body, with a metal layer coated on the inclined resin surface in an effort to overcome the above-mentioned problems. However, the inclined resin surface may be easily deformed, so it is almost impossible to form a desired reflecting surface on the ceramic body.

Thus, Song teaches that even if a resin material is used to equip a ceramic surface with an inclined surface, this leads to undesired results. An inclined ceramic surface is neither disclosed nor suggested by Song

If a person of skill were modifying Ishinaga's device, this person would have to apply a casing 5 which still has the inclined surface. Otherwise, the device of Ishinaga would no longer be provided with a reflector. However, as discussed above, no ceramic substitute body which could be used for substituting the casing and which has an inclined sidewall is disclosed in the cited prior art documents. Thus, teaching in this regard is missing and the skilled person could not modify Ishinaga's device to arrive at a device of the claimed kind.

Accordingly, the subject-matter of the independent claims is regarded to be patentably distinguished over the prior art.

Claim 22 also recites a connector body and a reflector body, "wherein said connector body and said reflector body are preformed separately from each other and said reflector body is disposed on said connector body in the form of a reflector top." For the same reasons presented above for claim 1, claim 22 is patentable over the cited references.

For at least these reasons, the applicants request that the rejections of the pending claims under 35 U.S.C. 103(a) be withdrawn.

New Claims

Claim 25 recites

a base part comprising a connector body on which a connecting conductor material is disposed,

a reflector part comprising a reflector body including a ceramic, wherein the reflector body is coated with a reflector material; and
an insulation part disposed between said base part and said reflector part.

These structural features distinguish the features the cited references for analogous reasons to those discussed above with respect to claim 1.

Specific arguments

All of the dependent claims are patentable for at least similar reasons as those for the claims on which they depend are patentable.

Any circumstance in which the applicants have (a) addressed certain comments of the examiner does not mean that the applicants concede other comments of the examiner, (b) made arguments for the patentability of some claims does not mean that there are not other good reasons for patentability of those claims and other claims, or (c) amended or canceled a claim does not mean that the applicants concede any of the examiner's positions with respect to that claim or other claims.

Please apply any charges or credits to Deposit Account No. 06-1050, referencing Attorney Docket No. 12406-0216US1.

Respectfully submitted,

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